

**APPLE DOT MATRIX PRINTER
PARALLEL GRAPHIC
INTERFACE CARD
FOR APPLE II AND
APPLE *IIe* COMPUTERS**

**INSTALLATION AND
OPERATING MANUAL**

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APPLE DOT MATRIX PRINTER PARALLEL GRAPHIC INTERFACE CARD

INSTALLATION AND OPERATING MANUAL

CAUTION

Please read this manual carefully before attempting to install the Apple Dot Matrix Printer or the Parallel Graphic Interface Card into your Apple II+ or Apple IIe computer. Information in this manual takes precedence over the instructions in Part 7 of the Apple Dot Matrix Printer Operators Guide "The Grand Connection ... Connecting the Apple Dot Matrix Printer to the Apple II series computer".

The Parallel Graphic Interface Card is designed to operate only with the Apple Dot Matrix Printer (Model A2M0059) and the Dot Matrix Printer Accessory Kit (Model A2C0350). You should not attempt to use it with any other piece of equipment.

NOTICE

Apple Computer Inc. reserves the right to make improvements in the product described in this manual at any time and without notice.

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Installation and Operating Manual

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Chapter 1. INTRODUCTION

The Parallel Graphic Interface Card is an Apple Dot Matrix Printer compatible interface for the Apple II, II+ and IIe computers.

In addition to the normal text output features it has powerful Graphic Dump Utilities in read only memory (ROM). These are easily invoked by using simple control commands which can either be typed directly from the Apple's Keyboard or called from within a program. The Graphics Dump Utilities contained within the ROM are designed to operate with the Apple Dot Matrix Printer ONLY.

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Chapter 2. INSTALLATION

ATTENTION: Please read this section carefully.

The Parallel Graphic Interface Card is easy to install, however it is very important that it is done correctly. If you follow all of the instructions carefully, you should have no trouble with the installation procedure. If at any stage you are uncertain of any aspect of the installation procedure, you are strongly advised to consult your Dealer.

(A) Installing The Parallel Graphic Interface Card

- 1) Before attempting to install the Parallel Graphic Interface Card make sure that the ON/OFF switch on the back of your Apple is OFF. Failure to ensure this could cause severe damage to both the Apple Computer and the Parallel Graphic Interface Card.
- 2) Do not unplug the Apple's power cord. If you unplug the Apple's power cord, you will isolate the Computer from the Common Earth Ground, leaving it vulnerable to static charges.
- 3) Now remove the Apple's Top Cover by pulling on the Back of the Cover until the two corner fasteners pop apart. Then slide the cover backwards until it is clear of the computer and set it aside for the time being.
- 4) Along the back inside edge of your Apple's main printed circuit board (Motherboard) you will see seven long narrow connectors. They are numbered from 1 in the leftmost corner to 7 in the rightmost corner. The numbers are written in white along the back edge of the Motherboard behind the connectors. Any interface cards installed in your Apple are plugged into these connectors.

N.B. If you are installing the Interface Card on an Apple II or II+ computer there will be eight slots numbered from 0 to 7.

- 5) The Parallel Graphic Interface Card will work in any slot from 1 to 6. N.B. If you intend using your printer with PASCAL or CP/M the Parallel Graphic Interface Card should be installed in slot 1.
- 6) The following instructions assume that you are going to install the Parallel Graphic Interface Card on slot 1.
- 7) The Parallel Graphic Interface Card is a precision instrument and should be treated with care. When you pick it up, don't grasp the card by the gold coloured "fingers". They are the medium through which the Parallel Graphic Interface Card communicates with the Apple, and their efficiency is decreased should they become dirty or greasy.
Now grasp the two top corners of the Interface Card between your thumbs and forefingers and position it above the slot 1 connector, with the Flat (Ribbon) Cable connected to the Interface Card facing the back of the computer.
- 8) Now double check that the Flat (Ribbon) Cable connected to the Interface Card is facing the back of the Apple.
- 9) Now gently but firmly push the gold "fingers" of the Interface Card into the slot 1 connector. The Interface Card should now be level and seated firmly in the connector.
- 10) You are now ready to position the 25 pin Female 'DB25' connector that is supplied on the other end of the Flat 'Ribbon' cable connected to the Interface Card.
N.B. Pin 7 of the connector has a banking insert in it, do not remove it.
- 11) If you are installing the Interface Card on an Apple II or an Apple II+ run the Flat 'Ribbon' cable through one of the convenient cut-outs on the rear of the Apple's case.
- 12) If you are installing the Interface Card on an Apple IIe then select an appropriate opening (preferably number II) on the Apple's back panel. Press the Tab on the openings plastic cover plate until it pops out. Put the connector against the opening (from the inside of the

computer) lining up the notches above and below the opening in the back panel with the screw holes in each end of the connector (DB25). Using the two screws supplied (AMP Part 205817-1) fasten the connector to the back panel and tighten the screws (using the small wrench provided with your computer and/or your disk drive).

- 13) Now replace the Apple's Top Cover. Congratulations, you successfully installed your Parallel Graphics Interface Card.

B) Connecting The Apple Dot Matrix Printer

- 1) Locate the 2-metre long connecting cable supplied with the Apple Dot Matrix Accessory Kit. This cable has 25 pin male 'DB25' connector on one end of it and a 36 pin male 'Amphenol' Connector on the other end. The cables part number (590-0042-B) is stamped on the DB25 connector. Locate the DB25 connector end of the cable and attach the male DB25 connector on the connecting cable to the female DB25 connector that you installed previously (when you installed the Interface Card). Now screw the two connectors together using the screws provided with the male DB25 connector.

N.B. Both of these connectors have a wide side and a narrow side. The matching sides of the connectors must be aligned before they can be properly connected together.

- 2) Attach the other end of the connecting cable, which has the 36 pin Amphenol connector on it, to the Parallel Interface Connector at the rear of your printer.

N.B. Both of these connectors have a wide side and narrow side. The matching side of the connectors must be aligned before they can be properly connected together.

- 3) When the connector is fully seated close the two wire clips (pull them towards the centre of the connector)

located either side of the Printer Interface Connector. This will lock the two connectors securely together.

- 4) Well done, you have now completed the cable installation.

Setting Up the Apple Dot Matrix Printer

Your Apple Dot Matrix Printer is already set up to run with the Parallel Graphic Interface Card. However if for some reason the DIP switches on your printer have been changed follow the instructions below.

In the sleeve of the Apple Dot Matrix Printer "Operators Guide" you will find the "Dot Matrix Printer Reference Card". Find the section labeled "Apple Dot Matrix Printer DIP Switch Configuration", this section of the card tells you how the dip switches should be set on your Apple Dot Matrix Printer. The DIP switches it refers to may be found by removing the top cover of the printer and looking to the right hand side of the printer. They are covered by a piece of perspex labelled SW 1 & SW 2.

Now set the two DIP switches to the standard switch settings (The ones with the asterisk's '*' next to them) as per the Reference Card.

Testing The Installation

To test your installation follow the instructions contained on page 21 of the "Apple Dot Matrix Operators Guide" entitled "Performing a Test Run with an Apple II series computer".

Chapter 3. USING THE PARALLEL GRAPHIC INTERFACE CARD

The Parallel Graphic Interface card enables the Apple to produce hard copy text and graphics output when used with the Apple Dot Matrix Printer.

It is possible to control the Parallel Graphic Interface Card through programs or directly from the Apple's Keyboard.

A) COMMAND TERMINOLOGY

- [I] A character enclosed in square brackets '[']' is a control character. To enter a control character, depress the control key (marked 'CTRL') then type the required character while still holding the 'CTRL' Key down. e.g. [I] is a control [I].
- "PR#1" Any characters enclosed by quotes " " are to be typed on the Keyboard as they appear.
- <RETURN> This means to type the key marked 'RETURN' on your keyboard.

B) Text Formatting Commands

The following discussion assumes that you are familiar with the APPLESOFT TUTORIAL manual, and that your Apple is in APPLESOFT BASIC, with the Parallel Graphic Interface Card installed in slot 1 of your Apple.

- "PR#1" Turns on the Parallel Graphic Interface Card. All subsequent characters appearing on the video screen will also be printed on the printer. This command must be issued before any of the following commands will be accepted.
- 1[P] This is equivalent to the "PR#1" except that it is issued from Apple's monitor. (Refer to the Apple II or the Apple IIe Reference Manual for further information on monitor commands).

- [I]xN Where x is a number between 40 and 255. Disables the video output (i.e. All characters that the computer outputs will go to the printer only). A carriage return will automatically be generated after 'x' characters have been printed. e.g. [I]80N disables the video output and formats the printer output for 80 columns per line.
- [I]I Returns output to the video screen as well as being printed on the printer.
- [I]K Turns off the automatic line feed generated by the Interface Card after the transmission of a carriage return.
- [I][CHR] Where 'CHR' is any character from A to Z. This command changes the command character from control 'I' to control 'CHR' (The changing of command characters is necessary if you wish to send TAB characters to the printer. The TAB character is a control 'I').
- [CHR][I] Change the current command character back to control 'I'.
- "PR#0" Turns the Parallel Graphic Interface Card off from BASIC.
- 0[P] Turns the Parallel Graphic Interface Card off from the Monitor.

C) Sending ESCape Codes

The Apple Dot Matrix Printer requires the ESCape character to precede some of its command codes to select/alter different features and modes of its operation e.g. Selecting bold print mode. (For further information on the different features of the Apple Dot Matrix Printer and how to obtain them, please refer to the Dot Matrix Reference Card supplied with the printer.) This can be achieved either from within a program, or directly from the Apple's keyboard. Because the Apple's keyboard input routine 'traps' the ESCape character, interpreting it to be the beginning of a cursor movement

function, it does not release the ESCape character for output. To enable you to send ESCape characters to your printer the Parallel Graphic Interface Card substitutes a control 'B' character for the ESCape character. Therefore to send an ESCape character to the printer directly from the Apple's keyboard, you actually type control 'B'. (ESCape characters sent from within a program are not affected).

Silentype Emulation Dump Invoked from a Logo Program

When using LOGO it is not possible to invoke a graphics dump directly from APPLE's keyboard. To invoke a "SILENTYPE" EMULATION" dump first define the following procedure, and when you wish to dump the current graphic display just type 'DUMP' to invoke the graphics dump procedure.

```
TO DUMP
  PRINTER 1
  TYPE CHAR 17
  PRINTER 0
END
```

NB: The above LOGO procedure assumes that the Parallel Graphic Printer Interface Card is in slot 1 of your APPLE.

DUMPING GRAPHICS USING THE PARALLEL GRAPHIC INTERFACE CARD

The Parallel Graphic Interface Card can dump the Apple's high resolution graphics screens to the Apple Dot Matrix Printer by using simple control commands. These control commands can be used either directly from the Apple's keyboard, or from within a program. Listed below are the different graphic dump options available to you and the commands to invoke them.

[J]K Turns on the automatic line feed generated by the Interface Card after the transmission of a carriage return.

[J]CH[R] Where 'CHR' is any character from A to Z. This command changes the command character from control 'J' to control 'CHR'. (Changing the command character is necessary if you wish to send TAB characters to the printer. The TAB character is a control 'I').

[J]CH[P] Change the current command character back to control 'J'.

'PR[0] Turns the Parallel Graphic Interface Card off from BASIC.

0:P) Turns the Parallel Graphic Interface Card off from the Monitor.

C) Sending ESCape Codes

The Apple Dot Matrix Printer requires the ESCape character to precede some of its command codes to select different features and modes. For example, e.g. Selecting hold print mode. (For further information on the different features of the Apple Dot Matrix Printer and how to obtain them, please refer to the Dot Matrix Reference Card supplied with the printer.) This can be achieved either from within a program, or directly from the Apple's keyboard. Because the Apple's keyboard input routine traps the ESCape character, interpreting it to be the beginning of a cursor movement

SILENTYPE EMULATION GRAPHICS DUMPS

There are two different command formats implemented which can be used to invoke a graphics dump. The first is an "Apple Silentype Printer Emulation" command. This feature will enable you to use your Apple Dot Matrix Printer to dump the graphics produced by such programs as: Apple II Business Graphics, PFS Graph, Visitrend/Plot, Trend-Spotter and many more. Up until now these programs have only been able to print the graphics on a Silentype printer. The "Silentype Emulation Dump" is invoked by only one command character, [Q] (control Q), and gives you an inverse, large (double size), graphics dump of the Apples Hi-resolution page 1 graphics screen. This is by far the most convenient way of invoking a graphics dump using the Parallel Graphics Interface Card.

Silentype Emulation Dump invoked from a Logo Program

When using LOGO it is not possible to invoke a graphics dump directly from APPLE's keyboard. To invoke a "SILENTYPE" EMULATION" dump first define the following procedure, and when you wish to dump the current graphic display just type 'DUMP' to invoke the graphics dump procedure.

```
TO DUMP
.PRINTER 1
TYPE CHAR 17
.PRINTER 0
END
```

NB: The above LOGO procedure assumes that the Parallel Graphic Printer Interface Card is in slot 1 of your APPLE.

USER SELECTABLE GRAPHICS DUMP OPTIONS

The second command format to invoke a graphics dump allows you to pass parameters to the Parallel Graphic Interface Card enabling the selection of any combination of the following graphic dump options.

- ★ Dump Hi — Resolution page 1 or 2.
- ★ Normal or inverse image.
- ★ Normal or double sized image.
- ★ 90 degree clock-wise rotation.

Graphics Dump Commands and Options.

- [T] This is the "Lead in character" which must precede all other command characters. (It tells the Parallel Interface Card that you wish to do a graphics dump.)
- R Rotate the image 90 degrees clock-wise. (This is one of the options that you may enter after the control 'T' and before the Page Select character.)
- L Large dump. This will give you a double size graphic dump of the image on the hi-resolution screen. (This is also an option character.)
- I Inverse dump. This will give you the inverse of what is displayed on the hi-resolution screen. i.e. What is displayed as black will be printed out white and vice versa. (This is also an option character.)
- 1 or 2 This selects which hi-resolution page you wish to dump to the printer (page select character). It is also the termination character, upon receipt of the page select character the graphic dump will commence.

Graphic Dump Command Format

The minimum command format to invoke a graphics dump with options is a two character format. The first character is a control 'T'. This is the 'Lead in character' which must precede all other command characters. The second character can

only be a 1 or a 2 (page select character) to select the hi-resolution page you wish to dump. Upon receipt of the page select character a normal sized, non-inverse, non-rotated dump (default dump) will commence. To select any of the options (rotate, inverse, double-size) the appropriate "Option select characters" must be entered between the Lead in character and the page select character.

There is no limit on the amount of option select characters that may be entered between the lead in character and the page select character provided that no illegal characters (characters other than R, L, I) have been entered. Listed below are examples of legal command formats.

- [T]RLI1 Rotated, Large, Inverse, Hi-resolution page 1
- [T]LLLL2 Large, Hi-resolution page 2
- [T]RIRI1 Rotated, Inverse, Hi-resolution page 1
- [T]2 Default, Hi-resolution page 2

Selectable Option Graphics Dump invoked directly from keyboard

Firstly the interface must be initialised as described on page 9 of this manual by typing "PR#1" <RETURN>. Then type control 'T'. Now that you have entered the lead-in character you can type any combination of legal option select characters as described above followed by the page select character.

Selectable Options Graphics Dump invoked from an Applesoft Program

```
10 REM THE IMAGE YOU WISH TO DUMP MUST ALREADY BE IN
20 REM APPLE'S HI-RES PAGE 1 OR PAGE 2.
30 PRINT CHR$(4); "PR#1" : REM INITIALISE INTERFACE
40 REM LINE 60 SENDS A CONTROL "T", R, I, L, 2 FOR A
50 REM ROTATED, INVERSE, LARGE DUMP OF HI-RES PAGE 2.
60 PRINT CHR$(20); "RIL2"
```


Selectable Option Graphics Dump invoked from a Pascal Program

The following PASCAL program 'HIRES' invokes a ROTATED, LARGE, INVERSE graphics dump of the current graphic display.

```
PROGRAM HIRES;  
PROCEDURE DUMP;  
  
VAR OUTPUT : INTERACTIVE;  
  
BEGIN  
  RESET (OUTPUT, 'PRINTER');  
  WRITE (OUTPUT, CHR(20), 'RLI1');  
END;  
  
BEGIN  
  DUMP;  
END.
```

Selectable Option Graphics Dump invoked from Logo Program

The following LOGO procedure will dump a ROTATED, LARGE, INVERSE image of the current graphic display. Just type 'DUMP' to invoke the graphic dump procedure.

```
TO DUMP  
  .PRINTER 1  
  TYPE CHAR 20 TYPE CHAR 82 TYPE CHAR 76  
  TYPE CHAR 73 TYPE CHAR 49  
  .PRINTER 0  
END
```

The ASCII character codes used in this procedure are listed on page 178 of 'APPLE LOGO REFERENCE MANUAL'.

IMPORTANT NOTE

IF YOU WISH TO ABORT A GRAPHICS DUMP PRESS THE KEY MARKED "ESC". REFRAIN FROM PRESSING "RESET".

Clearer graphic pictures may be obtained by setting up the Apple Dot Matrix printer for uni-directional mode IE — SW2 Switch 8 should be on (push switch towards rear of printer) to obtain this feature.

that bookstores, both independents and those of major national chains, are natural outlets for the sales of personal computer software. Waldenbooks will give us an excellent chance to prove it," said **Rob Lundgren**, vice president and general manager of Softsmith.

□ **American Airlines** (Dallas, TX) has begun a joint venture with **Micro D** (Fountain Valley, CA) to provide computer hardware and software buyers with free airline flights. The promotion awards points to buyers based on the dollar volume of their orders and awards a free flight anywhere in the continental United States to buyers who maintain high purchasing levels between September 1 and January 15. The eight buyers with the highest point totals can choose a trip to Hawaii, Puerto Rico, or the Virgin Islands.

□ Apple is alive and well down under. **CED Distributors**, the only Apple agents in New Zealand, have signed an \$800,000 contract with

Apple Computer Australia to supply low-cost boards for the Apple Dot Matrix Printer. The boards, which were designed by CED, have graphics capabilities not available on the boards supplied with the printer. CED currently markets most of its products in New Zealand, Australia, and the United Kingdom but is looking forward to moving into the American market. Apples are also making a strong impact on New Zealand high schools. Last year, CED Distributors scored a marketing coup when they offered one half-priced Apple to each high school and achieved an 89 percent penetration of the school market. Schools that had one system soon wanted more, and now 35 percent of New Zealand's high schools have three or more Apples. Soon schools will be able to go on-line with **New Zealand Beginning**, a national educational database and bulletin board.

□ **Robert C. Schneider** has joined **Sierra On-Line** (Coarsegold, CA) as vice president and